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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/052,703
Filing Date: January 16, 2002
Appellant(s): KANG ET AL.

Todd J. Iverson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 7, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because Applicant does not state why individual claims are separately patentable.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,534,816	Chen et al	8-1985
6,120,605	Sato	9-2000

(10) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claims 1-9, 12, 14, 15, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al (USPat. 4,534,816). This rejection is set forth in a prior Office Action, mailed on March 2, 2004.

Claims 10, 11, 13, 16-18, and 20-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (USPat. 4,534,816) in view of Sato (USPat. 6,120,605). This rejection is set forth in a prior Office Action, mailed on March 2, 2004.

(11) Response to Argument

Applicant states, with respect to Chen, Lee et al:

"

Chen FIG. 5 is a top cross-sectional view of electrode 12 showing the structure of a cooling passageway 56 (column 5, lines 3-4; emphasis added). Please note that Chen refers to 56 as a singular passageway not as multiple passageways.

"

In response, the Examiner cites Applicant's own disclosure in Figures 2-4 which detail Applicant's proposed plural passageways as "coolant inlets" (411, 413, 414; Figures 2-4) and "coolant outlets" (415, 417, 418; Figures 2-4). Applicant's plural inlets and outlets as detailed in Figures 2-4 are passageways within one closed cooling circuit. The Examiner identified Chen as

teaching the same cooling circuit with a corresponding number of passageways of a plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) and a plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) formed in a lower one (12; Figure 6; column 4, lines 56-68) of the plurality of plates (14, 16, 12; Figure 1; column 3, lines 20-48). Further, Chen himself teaches plural passageways (54; Figure 5; column 4; lines 56-68 – "passageways").

Applicant states:

"

Furthermore, as explained above, claim 1 requires that the alleged lower one of the plurality of plates (Chen's electrode 12) have a plurality of coolant inlets and a plurality of coolant outlets, where the plurality of inner cooling lines are configured to connect each of the coolant inlets to one of the coolant outlets. Chen's electrode 12 fails to do this…

"

In response, the Examiner reiterates his established position:

"

a plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) and a plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) formed in a lower one (12; Figure 6; column 4, lines 56-68) of the plurality of plates (14, 16, 12; Figure 1; column 3, lines 20-48), and further comprising a plurality of inner cooling lines (channel between 56 and 62; Figure 5) configured to connect each of the plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) to one of the plurality of coolant outlets (62;Figure 5; column 5, lines 3-28), as claimed by claim 1

"

It is seen in Applicant's Figures 2-4 that Applicant's inlets (411, 413, 414) and outlets (415, 417, 418) are also, as per Chen, interconnected between these inlets and outlets via "inner cooling lines". Chen identically teaches such a configuration as discussed above.

Applicant states, with respect to Chen:

"

To the contrary, the appellants have shown where Chen explicitly states that reference 56 is a "single, continuous, serpentine passageway 56 ... to provide for the flow of cooling fluid " (F1Gs. 5 and 6., column 5, lines 20-22).

"

However, in the Examiner's opinion, Applicant's very own disclosures in Figures 2-4 are identically described as "single, continuous, serpentine passageway (any labeled number on coolant piping; Figures 2-4) ... to provide for the flow of cooling fluid ". Hence, Applicant's claimed invention is anticipated by Chen.

Applicant states:

"

In the final office action, the appellants were asked to "compare the Examiner's citations of Chen's coolant inlets (56; FIG. 5) with Applicant's specific definition in the specification: "Referring to FIG. 2, a primary cooling inlet 410a may supply a plurality of coolant inlets 411" (Applicant's specification [0033])

"

However, with respect to all of Applicant's Figures, there is not displayed a "primary cooling inlet 410a".

Applicant states:

"

It is also incompatible with the appellant's alleged "specific definition" of a plurality of coolant inlets. See, for example, FIG. 2 of the specification, where there are four separate coolant inlets 411 for coolant entry into the lower plate 350.

"

In response, the Examiner notes that Applicant provides only two (2) labeled values of "411" in Figure 2 to represent Applicant's "coolant inlets". Regardless however, the Examiner's interpretation of Chen's plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) and a plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) is consistent with the scope of Applicant's own invention as shown in Applicant's Figures 2-4.

Applicant states:

"

Thus, the position that (56, FIG. 5) is a plurality of coolant inlets cannot be reconciled with Chen's explicit teaching that passageway 56 is a "single, continuous, serpentine passageway" or with Chen's explicit teaching that "the cooling fluid is transferred to and from passageway 56 by a vertical inlet hole 66 and a similar outlet hole 68 which intersect the extreme ends of passageway 56 as shown in FIG. 2, and indicated by dashed lines in FIG. 5" (column 5, lines 23-27; emphasis added).

"

In response, the Examiner again sites Applicant's own single, continuous, serpentine passageway starting at "COOLANT INLET" (Figure 2) and ending at "COOLANT OUTLET" (Figure 2)

who's plural "inlets" and plural "outlets" as discussed above are locations, with the single, continuous, serpentine passageway where fluid flow is in a specific direction relative to the circular geometry, in Figure 2 for example. It is noted again that Chen's plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) and a plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) are also fluid flow channels where inlets and outlets are provided relative to Chen's circular geometry as shown in Chen's Figure 5.

Applicant states:

"

Claim 4 recites that "the plurality of coolant inlets are formed on a first side of the lower plate, the plurality of coolant outlets are formed on a second side of the lower plate, and the plurality of inner cooling lines are formed parallel to each other" (emphasis added). It is alleged that Chen's element 56 (FIG. 5) discloses a plurality of coolant inlets, which are located on a first side of the lower plate. It is also alleged that element 62 (FIG. 5) discloses a plurality of coolant outlets, which are located on a second side of the lower plate. The appellants disagree.

"

The Examiner's citation of Chen's plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) and a plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) formed in a lower one (12; Figure 6; column 4, lines 56-68) of the plurality of plates (14, 16, 12; Figure 1; column 3, lines 20-48) such that the plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) are formed on a first side of the lower plate, the plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) are formed on a second side of the lower plate, and the plurality of inner cooling lines are formed parallel to each other remains anticipated by Chen as cited in the Final Office action. In

particular, Chen's lower one (12; Figure 6; column 4, lines 56-68) of the plurality of plates (14, 16, 12; Figure 1; column 3, lines 20-48) is shown cross-hatched in Figure 5 where the cross-hatching of the channels is absent apparently for clarity. The cross-hatching of Chen's lower one (12; Figure 6; column 4, lines 56-68) of the plurality of plates (14, 16, 12; Figure 1; column 3, lines 20-48) clearly demonstrates Applicant's claimed subject matter: "the plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) are formed on a first side (fluid inlet portion of any cross-hatched bar of Chen's item 12; Figure 5) of the lower plate, the plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) are formed on a second side (fluid outlet portion of any cross-hatched bar of Chen's item 12; Figure 5) of the lower plate, and the plurality of inner cooling lines (inlets and outlets) are formed parallel to each other".

Applicant states, with respect to claim 5:

"

Claim 5 recites "a first coolant inlet connected to a first coolant outlet by a first inner cooling line, wherein a second coolant outlet is connected to a second coolant inlet by a second inner cooling line, and wherein the second coolant outlet is located adjacent to the first coolant inlet on a first side of the lower plate (emphasis added). It is alleged Chen teaches that "the second coolant outlet (any other of 62; Figure 5; column 5, lines 3-28) is located adjacent to the first coolant inlet (any other of 56; Figure 5; column 5, lines 3-28) on a first side of the lower plate." The appellants disagree.

"

In response, the Examiner has cited Chen's "opening regions 62" and Chen's "passageways 54" as locations of Chen's coolant path that meets Applicant's claim requirements as stated in the

Final Rejection. Specifically, it is seen that consecutive ("first", "second") "opening regions 62"/"passageways 54" located along circumferential edges of Chen's lower plate 12, Figure 5 are "located adjacent" and are "on a first side of the lower plate" as claimed.

Applicant states, with respect to Chen:

"

Furthermore, it is apparent from a closer inspection of Chen FIG. 5 that the vertical inlet hole 66 and the outlet hole 68 are not positioned approximately 90° apart along a circumferential edge of the lower plate. The vertical inlet hole 66 and the outlet hole 68 are not located on a circumferential edge of the lower plate at all. Consequently, Chen fails to anticipate claim 6 because it does not show the identical invention in as complete detail as contained in the claim.

"

In response to Applicant's claim 6 arguments, the Examiner refers the reader to Applicant's Figure 2 of which claim 6 is based. The Examiner's citation of Chen who teaches a plurality of coolant inlets (56;Figure 5; column 5, lines 3-28) and a plurality of coolant outlets (62;Figure 5; column 5, lines 3-28) formed in a lower one (12; Figure 6; column 4, lines 56-68) of the plurality of plates (14, 16, 12; Figure 1; column 3, lines 20-48) is further shown to teach Applicant's claim 6 requirement of a first coolant outlet (any of 56;Figure 5; column 5, lines 3-28) is connected to a first coolant inlet (any of 62;Figure 5; column 5, lines 3-28) by a first inner cooling line (channel between any of 56 and any of 62; Figure 5), and wherein the first coolant outlet (any of 56;Figure 5; column 5, lines 3-28) is positioned approximately 90 degrees from a position of the first coolant inlet (any of 62;Figure 5; column 5, lines 3-28) along an circumferential edge of the lower plate (12; Figure 6; column 4, lines 56-68), as claimed by claim 6 – As is clearly seen from

Chen's Figure 5, the transition between the direction of Chen's first coolant inlet (any of 62;Figure 5; column 5, lines 3-28) and the direction of Chen's first coolant outlet (any of 56;Figure 5; column 5, lines 3-28) is a change in flow direction that is 90° along a circumferential edge of Chen's lower plate (12; Figure 6; column 4, lines 56-68). Likewise, claim 7's argument that Chen fails to teach "the second coolant outlet is located approximately 180 degrees from the first coolant inlet along the edge of the lower plate" is also moot in view of the orientation Chen's consecutive outlets relative to an intermediate inlet. As above, the transition between the direction of Chen's second coolant outlet (any of 56;Figure 5; column 5, lines 3-28) is a change in flow direction that is 180° along a circumferential edge of Chen's lower plate (12; Figure 6; column 4, lines 56-68) from an adjacent first coolant inlet (the 62 associated with the prior first coolant outlet; Figure 5). The Examiner relies on the same flow directions of Applicant's Figure 4 with those of Chen's Figure 5.

Applicant states that Chen does not teach the claim 8, 27 recitation:

"

..a first outer cooling line arranged outside the lower plate to connect the plurality of coolant inlets; and a second outer cooling line arranged outside the lower plate to connect the plurality of coolant outlets..

"

In response, the Examiner directs the reader to Applicant's Figure 1 and 2 with respect to Applicant's first outer cooling line (471; Figure 2, not labeled; Figure 1) and second outer cooling line (475; Figure 2, not labeled; Figure 1). As seen most prominently in Figure 1, each of the outer cooling "lines" that are arranged outside Applicant's lower plate (350; Figure 1), as

claimed, are the coolant inlet and outlet lines that are exterior to Applicant's lower plate (350; Figure 1). With Applicant's disclosure as a guide to Applicant's claim interpretation, the Examiner has cited Chen's first outer cooling line (66; Figure 5) and a second outer cooling line (68; Figure 5). Figure 1 of Chen shows Chen's second outer cooling line 22 interfacing at 68 which is shown in both Figure 1 and 5. Thus Chen's second outer cooling line 22 interfacing at 68 which is shown in both Figure 1 and 5 is arranged outside Chen's lower plate (12; Figure 1,5). With respect to Chen's first outer cooling line (66; Figure 5), because Chen's first outer cooling line is not shown as an exterior piping relative to Chen's lower plate (12; Figure 1,5) it is the Examiner's opinion that Chen's first outer cooling line is an exterior piping is inherent and is a necessary condition for Chen's cooling plate to function.

Applicant states, with respect to claim 9:

"

However, claim 9 also requires that the alleged heater stage 40 be located in a lower portion of the alleged process chamber 30 (emphasis added). If one accepts that Chen's upper section 40 is the recited heater stage and that Chen's outer housing 30 is the recited process chamber, then FIG. 1 clearly shows that the top (uppermost surface) of the alleged heater stage 40 does not reach the level of the bottom (lowest surface) of the alleged process chamber 30. In other words, Chen FIG. 1 shows the alleged heater stage 40 positioned below, not in, the alleged process chamber 30 (emphasis added). Thus, it is impossible for the alleged heater stage 40 to be located in a lower portion of the alleged process chamber 30, because the uppermost surface of the alleged heater stage 40 is not located in the space defined by the alleged process chamber 30 (emphasis added).

"

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "because the uppermost surface of the alleged heater stage 40 is not located in the space defined by the alleged process chamber 30 (emphasis added)") are not recited in the rejected claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The Examiner maintains his claim 9 interpretation of Chen that Chen's heater stage 40 is located in a lower portion of Chen's process chamber 30 as shown in Figure 1. Additionally, it is noted that Chen's chamber volume 30 has required components 28 and 36 in Figure 1.

Applicant states, with respect to claim 9:

"

However, contrary to claim 9, the alleged separating device 44 is not configured to separate the alleged heater stage 40 from the bottom of the alleged process chamber 30. This can be seen in Chen FIG. 1, where an exhaust ring 28 is in direct contact with the bottom of the alleged process chamber 30 and an upper surface of the alleged heater stage 40 (column 4, lines 9-15). Thus, it is the exhaust ring 28, and not the alleged heater stage 40, that is configured to separate the heater stage from the bottom of the alleged process chamber 30. Also contrary to claim 9, the alleged separating device 44 is not configured to reduce a volume of processing space within the alleged processing chamber 30. This is because, like the alleged heater stage 40, the alleged separating device 44 is not located within the alleged processing chamber 30 (emphasis added).

"

The Examiner has stated in the Final Rejection that a rim shaped separating device (44; Figure 1; column 3, lines 62-69) arranged between the process chamber (30; Figure 1; column 4, lines 1-29) and the heater stage (40; Figure 1; column 4, lines 29-39) – compare Figure 1 of Chen with Figure 1 of the present Application, where said rim shaped separating device (44; Figure 1; column 3, lines 62-69) configured to separate the heater stage (40; Figure 1; column 4, lines 29-39) from the process chamber (30; Figure 1; column 4, lines 1-29) and to reduce a volume of processing space within the process chamber (30; Figure 1; column 4, lines 1-29), as claimed by claim 9. The Examiner maintains his interpretation of Chen. That Chen's exhaust ring 28 is in direct contact with the bottom of the alleged process chamber 30 and an upper surface of the alleged heater stage 40 is agreed, however, the Examiner's citation of Chen's rim shaped separating device (44; Figure 1; column 3, lines 62-69), as claimed, meets Applicant's claim requirements of:

i. separating the heater stage (40; Figure 1; column 4, lines 29-39) from the process chamber (30; Figure 1; column 4, lines 1-29). Applicant does not claim that said components should have common interfacing surfaces as suggested by Applicant's Figure 1

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "an exhaust ring 28 is in direct contact with the bottom of the alleged process chamber 30 and an upper surface of the alleged heater stage 40") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

ii. reduce a volume of processing space (46; Figure 1) within the process chamber (30; Figure 1; column 4, lines 1-29)

Applicant states with respect to claim 11:

"

Claim 11 recites that the separating device is located in a lower portion of the process chamber and contacts the bottom of the heater stage. It is alleged that Sato teaches a heater stage (17; FIG. 1; column 4, lines 44-65). It is also alleged that Sato teaches a separating device (lowest portion of 11; Figure 1) that contacts a bottom of Sato's heater stage 17. The appellants disagree. Sato teaches that the alleged separating device (lowest portion of 11) is actually a side wall 11 of a reactor 10 (FIG. 1 ; column 4, lines 46-47). The reactor 10 also includes a top wall 12 (FIG. 1 ; column 4, lines 46-47). Thus, Sato's reactor 10 corresponds to the recited process chamber of claim 9, upon which claim 11 depends.

"

The Examiner disagrees. Specifically, the Examiner stated, in making the combination that "It ...to replace Chen's wafer supporting and heating structure with Sato's supporting and heating structure as discussed above to process a wafer at optimal temperatures." Additionally, Sato teaches that his wafer supporting and heating structure is beneficial in reducing residual particles as taught by Sato (column 3; lines 20-26). Applicant's position that Sato's separating device (lowest portion of 11) is actually a side wall 11 of a reactor 10 (FIG. 1 ; column 4, lines 46-47) is agreed to the extent that the whole of Sato's element 11 is a side wall 11 of a reactor 10, however, the Examiner cites Sato's separating device as the "lowest portion of 11" which contacts a bottom of Sato's heater stage 17.

Applicant states, with respect to claim 23:

“

Similar to claim 4, claim 23 recites the plurality of coolant inlets are formed on one side of the lower plate, the plurality of coolant outlets are formed on an opposite side of the lower plate. Thus, for the same reasons outlined for claim 4, Chen does not teach these features of claim 23.

“

It is evident from Chen’s Figure 5 that Chen’s inlet (66) and Chen’s outlet (68) are formed “on an opposite side of the lower plate”. Additionally, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

Applicant states, with respect to claim 25:

“

Claim 25 recites a first coolant outlet connected to a first coolant inlet by a first inner cooling line, wherein the first inner cooling line has a path that forms an approximately 90° angle, said angle having a vertex located at approximately the center of the lower plate (emphasis added).

“

The Examiner has articulated in claims 5 and claims 6 that Chen’s first coolant inlet (any of 62;Figure 5; column 5, lines 3-28) is connected to a first coolant outlet (any of 56;Figure 5; column 5, lines 3-28) by a first inner cooling line (channel between any of 56 and any of 62; Figure 5) that Chen’s first inner cooling line does not form an angle with a vertex at approximately the center of the lower plate is a dimensional difference which the Examiner believes is obvious. It is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777

(Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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November 9, 2004

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